

**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 8-10-04  
 Art Unit: 1752 Phone Number 302-1333 Serial Number: 10/648,762  
 Mail Box and Bldg/Room Location: 9066 Results Format Preferred (circled): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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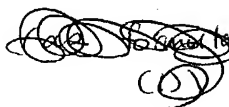
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Base material for Lithography

Inventors (please provide full names): Nakamura, Etsuko; Koshijima, Jun; Tanaka, Takeshi

Earliest Priority Filing Date: 8-26-2003

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please Search for the <sup>Co</sup>polymer shown   
 in Claim #1  
 (The polymer has to have both repeating units (1) and (2))

SCIENTIFIC REFERENCE BR  
 Sci. & Tech. Info. Cntr

AUG 21

Pat. & T.M. Office

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**STAFF USE ONLY**

	Type of Search	Vendors and cost where applicable
Searcher: <u>LH</u>	NA Sequence (#) _____	STN <u>\$244.04</u>
Searcher Phone #: <u>571-272-2538</u>	AA Sequence (#) _____	Dialog _____
Searcher Location: <u>4A30 Rem</u>	Structure (#) <u>2</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: <u>8/13/04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>30</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>60</u>	Other _____	Other (specify) _____

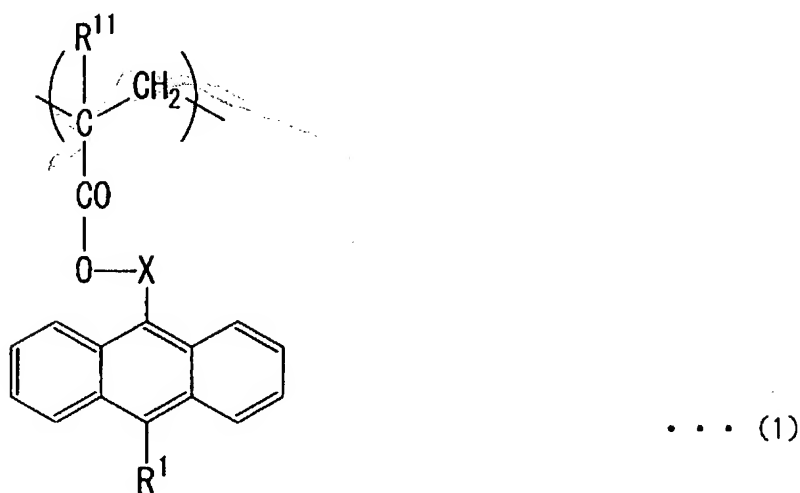
What is claimed is:

1. A base material for lithography comprising a component (a), a component (b), and a component (c) described below:

(a) a cross linking agent;

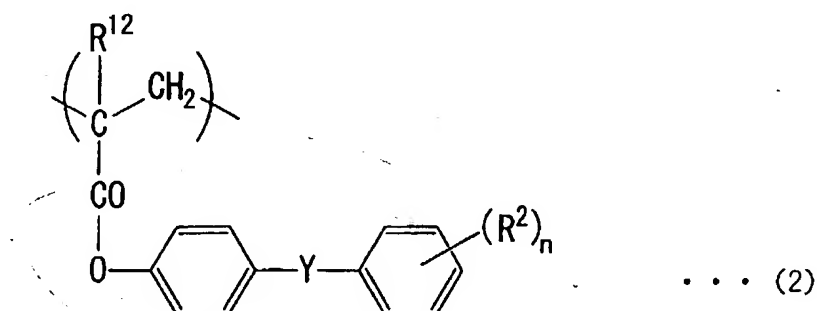
(b) a copolymer comprising a (meth)acrylate ester unit represented by a general formula

(1) shown below,



wherein,  $R^1$  represents a hydrogen atom, a halogen atom, a hydroxyl group, a carboxyl group, or a hydrocarbon group of 1 to 5 carbon atoms that is substituted with at least one of a halogen atom, a hydroxyl group and a carboxyl group; X represents an alkyl chain of 1 to 4 carbon atoms; and  $R^{11}$  represents a hydrogen atom or a methyl group,

and a (meth)acrylate ester unit represented by a general formula (2) shown below,



wherein,  $\text{R}^2$  represents a hydroxyl group, a carboxyl group, or a hydrocarbon group of 1 to 5 carbon atoms that is substituted with at least one of a hydroxyl group and a carboxyl group; Y represents  $-\text{SO}_2-$ ,  $-\text{CO}-$  or  $-\text{SO}-$ ; n represents a number from 1 to 4; and  $\text{R}^{12}$  represents a hydrogen atom or a methyl group; and

(c) an organic solvent.

2. A base material for lithography according to claim 1, wherein said component (b) is a copolymer that also comprises a (meth)acrylate ester unit represented by a general formula (3) shown below:



wherein,  $\text{R}^3$  represents a hydrocarbon group of 1 to 5 carbon atoms; and  $\text{R}^{13}$  represents a hydrogen atom or a methyl group.

=> fil reg

FILE 'REGISTRY' ENTERED AT 14:19:28 ON 13 AUG 2004  
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Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 11 AUG 2004 HIGHEST RN 725685-10-9  
DICTIONARY FILE UPDATES: 11 AUG 2004 HIGHEST RN 725685-10-9

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more  
information enter HELP PROP at an arrow prompt in the file or refer  
to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> d his

(FILE 'HOME' ENTERED AT 13:08:43 ON 13 AUG 2004)

FILE 'LREGISTRY' ENTERED AT 13:08:54 ON 13 AUG 2004

L1 STRUCTURE  
L2 STRUCTURE

FILE 'REGISTRY' ENTERED AT 13:35:06 ON 13 AUG 2004  
L3 SCREEN 2043

FILE 'REGISTRY' ENTERED AT 13:37:00 ON 13 AUG 2004

FILE 'REGISTRY' ENTERED AT 13:46:16 ON 13 AUG 2004  
L4 0 S L1 AND L2 AND L3

FILE 'HCAPLUS' ENTERED AT 13:48:35 ON 13 AUG 2004

L5 94358 S NAKAMURA ?/AU  
L6 225 S KOSHIJIMA ?/AU  
L7 125554 S TANAKA ?/AU  
L8 0 S L5 AND L6 AND L7

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L9 304 S KOSHIYAMA ?/AU  
L10 2 S L5 AND L7 AND L9  
SEL L10 1-2 RN

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L11 4 S E1-E4

FILE 'HCAPLUS' ENTERED AT 13:54:36 ON 13 AUG 2004

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FILE 'HCAPLUS' ENTERED AT 13:55:41 ON 13 AUG 2004  
L12 3546 S L5 AND L7  
L13 9 S L5 AND L9  
L14 24 S L7 AND L9  
L15 55507 S LITHOG?  
L16 24 S (L12 OR L13 OR L14) AND L15  
L17 0 S (L13 OR L14) AND L15  
L18 1320 S NAKAMURA E?/AU  
L19 19727 S TANAKA T?/AU  
L20 2 S L18 AND L19  
SEL L20 2 RN

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L22 STR L1  
L23 STR L2  
L24 0 S L22 AND L23 AND L3

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L25 STR L22  
L26 STR L23

FILE 'REGISTRY' ENTERED AT 14:14:02 ON 13 AUG 2004  
L27 0 S L25 AND L26 AND L3  
L28 2 S L25 AND L26 AND L3 FUL  
SAV L28 LEE762/A

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L29 0 S L28

FILE 'ZCAPLUS' ENTERED AT 14:17:40 ON 13 AUG 2004  
L30 1 S L28

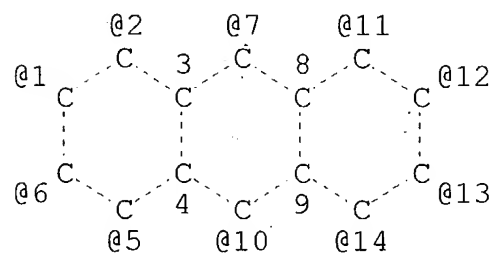
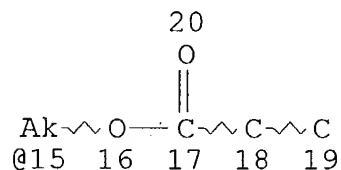
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L3 SCR 2043

L25 STR



VPA 15-7/11/12/13/14/10/5/6/1/2 U

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

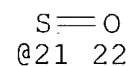
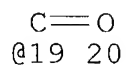
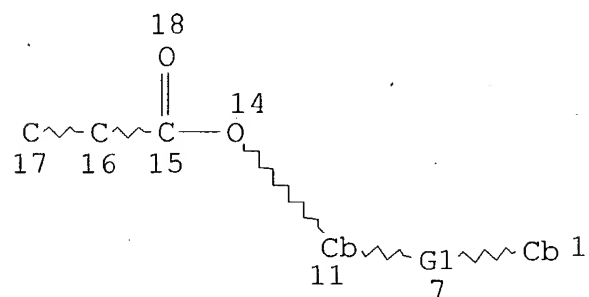
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 20

STEREO ATTRIBUTES: NONE

L26 STR



VAR G1=SO2/19/21

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## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
GGCAT IS UNS AT 1  
GGCAT IS UNS AT 11  
DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 12

## STEREO ATTRIBUTES: NONE

L28 2 SEA FILE=REGISTRY SSS FUL L25 AND L26 AND L3

100.0% PROCESSED 1297 ITERATIONS  
SEARCH TIME: 00.00.01

2 ANSWERS

=> fil zcaplus

FILE 'ZCAPLUS' ENTERED AT 14:20:16 ON 13 AUG 2004

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FILE COVERS 1907 - 13 Aug 2004 VOL 141 ISS 7

FILE LAST UPDATED: 11 Aug 2004 (20040811/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l30 1 all hitstr

L30 ANSWER 1 OF 1 ZCAPLUS COPYRIGHT 2004 ACS on STN

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AN 2004:219230 ZCAPLUS  
 DN 140:261411  
 ED Entered STN: 19 Mar 2004  
 TI Anti-reflective undercoat layer for photolithography  
 IN Iguchi, Etsuko; Koshiyama, Atsushi; Tanaka, Takeshi  
 PA Tokyo Ohka Kogyo Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 22 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G03F007-11  
 ICS C08F220-18; H01L021-027  
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 35

## FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004085921	A2	20040318	JP 2002-247187	20020827
	US 2004121260	A1	20040624	US 2003-648762	20030826
PRAI	JP 2002-247187	A	20020827		

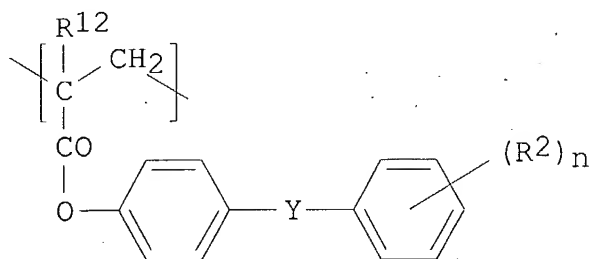
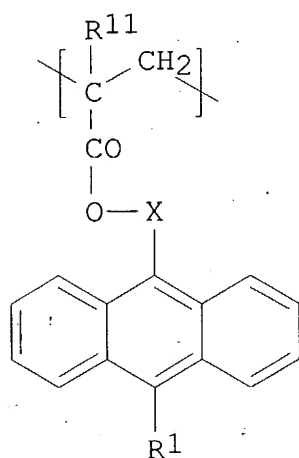
## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004085921	ICM	G03F007-11
	ICS	C08F220-18; H01L021-027
JP 2004085921	FTERM	2H025/AA02; 2H025/AB16; 2H025/AC01; 2H025/AC04; 2H025/AD01; 2H025/AD03; 2H025/DA34; 4J100/AL03R; 4J100/AL08P; 4J100/AL08Q; 4J100/BA03P; 4J100/BA03Q; 4J100/BA12Q; 4J100/BA16P; 4J100/BA16Q; 4J100/BA55Q; 4J100/BA58Q; 4J100/BB00P; 4J100/BC43Q; 4J100/BC48P; 4J100/CA04; 4J100/CA05; 4J100/JA32; 4J100/JA38; 5F046/PA07

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- AB The title undercoat layer is formed with a coating soln. consists of:
- a crosslinking agent, an acrylic copolymer, and a solvent, wherein the acrylic copolymer has repeating unit I (R1 = c1-5 hydrocarbon substituted with H, halo, carboxyl, etc.; X = c1-4 alkyl; R11 = methyl) and II (R2 = c1-5 hydrocarbon substituted with H, halo, carboxyl, etc.; Y = -SO2-, -CO-, -SO-; n = 1-4 integer). The undercoat layer shows good anti-reflection property and good coating characteristics.
- ST anti reflective undercoat layer photolithog
- IT Antireflective films  
Photolithography  
(anti-reflective undercoat layer for photolithog.)
- IT Aminoplasts  
RL: TEM (Technical or engineered material use); USES (Uses)  
(anti-reflective undercoat layer for photolithog.)
- IT Aminoplasts  
RL: TEM (Technical or engineered material use); USES (Uses)  
(mandelate ester; anti-reflective undercoat layer for photolithog.)
- IT 110-43-0, 2-Heptanone 84540-57-8  
RL: NUU (Other use, unclassified); USES (Uses)  
(anti-reflective undercoat layer for photolithog.)
- IT 9003-08-1, Nikalac MX 750 9003-08-1D, Nikalac MX 750, mandelate ester  
671790-41-3 671790-43-5  
RL: TEM (Technical or engineered material use); USES (Uses)  
(anti-reflective undercoat layer for photolithog.)

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IT 671790-41-3 671790-43-5

RL: TEM (Technical or engineered material use); USES (Uses)  
(anti-reflective undercoat layer for photolithog.)

RN 671790-41-3 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-anthracenylmethyl ester, polymer with  
4-[(4-hydroxyphenyl)sulfonyl]phenyl 2-methyl-2-propenoate (9CI) (CA

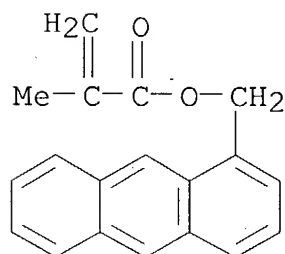
INDEX

NAME)

CM 1

CRN 671790-40-2

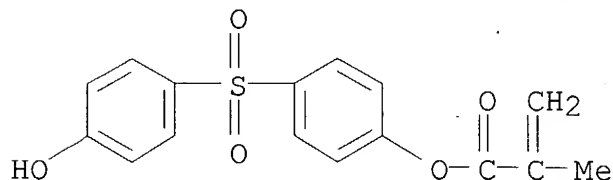
CMF C19 H16 O2



CM 2

CRN 111818-69-0

CMF C16 H14 O5 S



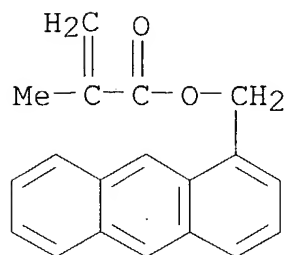
RN 671790-43-5 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-anthracenylmethyl ester, polymer with  
4-[(4-hydroxyphenyl)sulfonyl]phenyl 2-methyl-2-propenoate and methyl  
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

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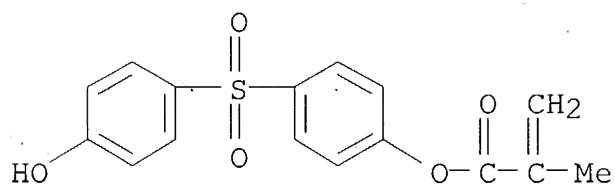
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CMF C19 H16 O2



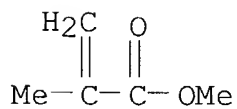
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CRN 111818-69-0  
CMF C16 H14 O5 S



CM 3

CRN 80-62-6  
CMF C5 H8 O2



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